

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Appln. Of:       Cope, *et al*  
Serial No.:            10/634,434  
Filed:                 August 5, 2003  
For:                    Self-powered Direct Current Mitigation Circuit for Transformers  
Group:                 2836                               Confirmation No. 8296  
Examiner:             Rutland Wallis, Michael         DOCKET: EMI.1002

MAIL STOP APPEAL BRIEF - PATENTS  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**SUBSTITUTE REPLY BRIEF TRANSMITTAL LETTER**

In connection with the above-entitled matter, enclosed please find Appellants'  
Substitute Reply Brief.

In the event there are any fee deficiencies or additional fees are payable, please  
charge them (or credit any overpayment) to our Deposit Account Number 08-1391.

Respectfully submitted,



Todd A. Sullivan  
Attorney for Appellants  
Reg. No. 47,117

Customer No. 26,812

**CERTIFICATE OF ELECTRONIC FILING**

I hereby certify that this correspondence is being deposited with the United States Patent Office via the  
electronic filing procedure on June 20, 2007.

By: Kristine Stevens

TAS:klb

**HAYES SOLOWAY P.C.**  
3450 E. Sunrise Drive  
TUCSON, AZ 85718  
TEL. 520.882.7623  
FAX. 520.882.7643

175 CANAL STREET  
MANCHESTER, NH 03101  
TEL. 603.668.1400  
FAX. 603.668.8567

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Appln. Of:      *Cope, et al*  
Serial No.:            10/634,434  
Filed:                  August 5, 2003  
For:                    Self-powered Direct Current Mitigation Circuit for Transformers  
Group:                2836                              Confirmation No. 8296  
Examiner:            Rutland Wallis, Michael              DOCKET: EMI.1002

MAIL STOP APPEAL BRIEF - PATENTS  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**APPELLANTS'  
SUBSTITUTE REPLY BRIEF**

HAYES SOLOWAY P.C.  
3450 E. SUNRISE DRIVE  
SUITE 140  
TUCSON, AZ 85718  
TEL. 520.882.7623  
FAX. 520.882.7643

175 CANAL STREET  
MANCHESTER, NH 03101  
TEL. 603.668.1400  
FAX. 603.668.8567

**TABLE OF CONTENTS**

	<u>Page</u>
APPELLANTS' REPLY BRIEF UNDER 37 CFR 1.193 (b).....	1
ARGUMENTS .....	4
CONCLUSION .....	10

HAYES SOLOWAY P.C.  
3450 E. SUNRISE DRIVE  
SUITE 140  
TUCSON, AZ 85718  
TEL. 520.882.7623  
FAX. 520.882.7643

175 CANAL STREET  
MANCHESTER, NH 03101  
TEL. 603.668.1400  
FAX. 603.668.8567

**TABLE OF CASES**

In re Dow Chemical, 5 USPQ 2d 1529, 1531 .....	4
In re Keller, 208 USPQ 871, 881 .....	4
In re Ratti, 270 F.2d 810, 123 USPQ 349.....	8

**TABLE OF AUTHORITIES**

35 USC § 103(a).....	4
----------------------	---

HAYES SOLOWAY P.C.  
3450 E. SUNRISE DRIVE,  
SUITE 140  
TUCSON, AZ 85718  
TEL. 520.882.7623  
FAX. 520.882.7643

175 CANAL STREET  
MANCHESTER, NH 03101  
TEL. 603.668.1400  
FAX. 603.668.8567

APPELLANTS' SUBSTITUTE REPLY BRIEF

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Appln. Of:       Cope, *et al*  
Serial No.:            10/634,434  
Filed:                 August 5, 2003  
For:                    Self-powered Direct Current Mitigation Circuit for Transformers  
Group:                 2836                               Confirmation No. 8296  
Examiner:             Rutland Wallis, Michael               DOCKET: EMI.1002

MAIL STOP APPEAL BRIEF - PATENTS  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**APPELLANTS' SUBSTITUTE REPLY BRIEF UNDER 37 CFR 1.193 (b)**

This Substitute Reply Brief is being filed in response to new points of argument raised in the Examiner's Answer mailed April 20, 2007. Appellants respond to these new points of argument as follows.

HAYES SOLOWAY P.C.  
3450 E. SUNRISE DRIVE  
SUITE 140  
TUCSON, AZ 85718  
TEL. 520.882.7623  
FAX. 520.882.7643

175 CANAL STREET  
MANCHESTER, NH  
03101  
TEL. 603.668.1400  
FAX. 603.668.8567

**STATUS OF CLAIMS**

Claims 1-20 are pending in this application.

Claims 1-20 stand finally rejected and are on Appeal.

HAYES SOLOWAY P.C.  
3450 E. SUNRISE DRIVE  
SUITE 140  
TUCSON, AZ 85718  
TEL. 520.882.7623  
FAX. 520.882.7643

175 CANAL STREET  
MANCHESTER, NH  
03101  
TEL. 603.668.1400  
FAX. 603.668.8567

**GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

- I. Whether the rejection of claims 1-5, 7-8 and 12-18 under 35 USC 103(a) is in error.
- II. Whether the rejection of claim 6 under 35 USC 103(a) is in error.
- III. Whether the rejection of claims 9-11 under 35 USC 103(a) is in error.

HAYES SOLOWAY P.C.  
3450 E. SUNRISE DRIVE  
SUITE 140  
TUCSON, AZ 85718  
TEL. 520.882.7623  
FAX. 520.882.7643

175 CANAL STREET  
MANCHESTER, NH  
03101  
TEL. 603.668.1400  
FAX. 603.668.8567

## **ARGUMENTS**

The Applicant is satisfied with the arguments raised in the appeal brief, which have generally not been adequately addressed by the Examiner's Answer. Specific flaws in the Examiner's Answer are herein identified.

### **I. Comparison of the Art**

Before addressing the claim language, it is a worthwhile exercise to review the prior art in comparison to the Applicant's invention. As articulated in the background of the originally-filed application, the present invention is directed toward resolving power transmission problems associated with geomagnetically-caused ground induced current and the effects of space weather. This naturally occurring activity can add up to 200 amps to a transmission line and can overload transmission systems on a national, continental, or even global scale.

Kern discloses overcoming DC current in transmission lines with current offsets. However, producing Kern-like systems that can produce up to 200 amps as an offset for each transformer in a system is highly impractical and inefficient. The Applicant has produced a more efficient system for combating the forces of nature in transmission lines. The Applicant has produced a system that provides, as claimed, a flux offset, which can contain and counter effect the DC current produced by nature. Thus, the present invention is not an obvious change to the Kern invention, but a different device directed to solving a different problem in a meaningfully different and patentably distinct way.

### **II. Examiner's Answer**

A. Failure to disclose, teach, or suggest, either implicitly or explicitly, all elements/features/steps of the claims at issue

HAYES SOLOWAY P.C.  
3450 E. SUNRISE DRIVE  
SUITE 140  
TUCSON, AZ 85718  
TEL. 520.882.7623  
FAX. 520.882.7643

175 CANAL STREET  
MANCHESTER, NH  
03101  
TEL. 603.668.1400  
FAX. 603.668.8567



The Examiner's statements again are flawed. The Examiner opens the "Response to Argument" section on page 8 of the Answer by stating "DC flux in a transformer" is not a claimed limitation (this phrase was not used in remarks promoting allowance, but in Section D of page 12 of the appeal brief summarizing Kern). However, "wherein said current provided to said winding generates a magnetic flux that offsets a flux created by said DC current" is a claimed limitation. It is well established at law that, for a proper rejection of a claim under 35 U.S.C. §103 as being obvious based upon a combination of references, the cited combination of references must disclose, teach, or suggest, either implicitly or explicitly, all elements/features/steps of the claim at issue. See, e.g., In re Dow Chemical, 5 U.S.P.Q. 2d 1529, 1531 (Fed. Cir. 1988), and In re Keller, 208 U.S.P.Q. 871, 881 (C.C.P.A. 1981).

Both Kern and the claimed invention deal with a DC current present in line A that feeds into winding A in a transformer, with complimentary winding B and line B. Kern teaches sensing even harmonics (or some indicator of DC current) in line B and providing a DC current to line A that offsets/zeroes the DC current previously present in Line A. Kern basically eliminates the source of the DC flux, such that the solution leaves no DC current in any windings. The claimed invention provides current to windings to generate a magnetic flux that offsets a flux created by DC current. For instance, the claimed invention may provide a winding C proximate to winding A and a current to winding C that generates a DC flux that offsets a DC flux generated by the DC current in winding A. Not all of this structure is claimed, but enough is claimed to be patentable over the cited references.

Kern fails to disclose the limitation, "wherein said current provided to said winding generates a magnetic flux that offsets a flux created by said DC current." Column 8, line 46 through column 10, line 20 of Kern describe specifically how the even harmonic situation is

HAYES SOLOWAY P.C.  
3450 E. SUNRISE DRIVE  
SUITE 140  
TUCSON, AZ 85718  
TEL. 520.882.7623  
FAX. 520.882.7643

175 CANAL STREET  
MANCHESTER, NH  
03101  
TEL. 603.668.1400  
FAX. 603.668.8567

addressed in Kern, which is summarized in lines 15-20 of column 10 of Kern, "these controller 40 action serve to zero out the DC current injection entering the voltage transformer 26, which beneficially controls even harmonics." Kern does not teach or disclose current provided to said winding generates a magnetic flux that offsets a flux created by said DC current. Kern only discloses providing a DC current to a transmission line to zero out a sensed DC current in the transmission line.

Further, Liu does not disclose this limitation and the Examiner does not suggest that Liu discloses this limitation. The bottom of page 9 of the Examiner's Answer is further directed to this point. As the Examiner states, "Applicant also argues neither reference teaches applying a current to winding to offset a flux created by DC current." The Examiner makes no assertion that Liu discloses this claim limitation and goes into an explanation of Kern that basically asserts Kern uses an offset on a current going to the winding to mitigate a harmonic. Of course he does not assert Kern teaches, and Kern does not teach, providing a current to a winding to "generate a magnetic flux that offsets a flux created by a DC current" as required by the claims. Neither reference teaches this limitation and the Examiner is unable to articulate a prima facie obviousness argument because neither reference discloses this element.

As the limitation of generating "a magnetic flux that offsets a flux created by a DC current" is present in independent claims 1, 13, and 19, and is not present in any of the references, all three independent claims and the claims dependent thereon, claims 2-12, 14-18, and 20, should be allowed.

#### **B. Combination of References**

HAYES SOLOWAY P.C.  
3450 E. SUNRISE DRIVE  
SUITE 140  
TUCSON, AZ 85718  
TEL. 520.882.7623  
FAX. 520.882.7643

175 CANAL STREET  
MANCHESTER, NH  
03101  
TEL. 603.668.1400  
FAX. 603.668.8567

On page 10, the Examiner presents an argument for motivation to combine the references that is inconsistent with the articulated rejection on page 4 and insufficient to support a prima facie obviousness argument. As stated on page 4, Liu provides “a teaching of using switches for providing current into a winding of a transformer.” But the Examiner states on page 10 that the use of switches of Liu would enable the control system “to output AC power to the loads.” Is Liu being relied upon to provide current to the winding of a transformer or AC power to the loads? As stated on page 4, Liu provides “a current into a winding of a transformer ... wherein the windings of the transformer of Liu generates a magnetic flux that offsets harmonic current in the transmission line.” But the Examiner states on page 10, “Liu is not provided to teach the use of an active filter ... Liu is provided to support that one of ordinary skill in the art would recognize the use of switches as a known means to inject the DC offset signal in the transmission line.” Is Liu being relied upon for the generation of a magnetic flux or for the injection of a DC offset signal? If Liu is being relied upon to show switches are a known means for injecting a DC offset signal in the transmission line, where is the disclosure in Liu for injecting a DC offset signal in the transmission line? The proposed combination clarified by the Examiner further distinguishes the presently claimed invention.

Claim 1 requires “switches for providing a current into a winding of a transformer.” The Kern DC offset adjust item 24 does not provide current into a winding and Liu is no longer cited for this purpose (Liu is being cited to show “a known means to inject the DC offset signal *in the transmission line*”), thus the Examiner proposed combination of the references fails to disclose all limitations of claim 1. Claim 1 requires “current provided to said winding generates a magnetic flux that offsets a flux created by said DC current.” Kern does not disclose providing current to a winding to generate a magnetic flux and Liu is not cited for this

HAYES SOLOWAY P.C.  
3450 E. SUNRISE DRIVE  
SUITE 140  
TUCSON, AZ 85718  
TEL. 520.882.7623  
FAX. 520.882.7643

175 CANAL STREET  
MANCHESTER, NH  
03101  
TEL. 603.668.1400  
FAX. 603.668.8567

purpose, thus the Examiner proposed combination of the references fails to disclose all limitations of claim 1.

Claim 13 requires "providing a current into a winding of a transformer." The Kern DC offset adjust item 24 does not provide current into a winding and Liu is not cited for this purpose, thus the Examiner proposed combination of the references fails to disclose all limitations of claim 13. Claim 13 requires "generating a magnetic flux that offsets a flux created by said DC and harmonic currents resulting from the DC." Kern does not disclose providing current to a winding to generate a magnetic flux and Liu is not cited for this purpose, thus the Examiner proposed combination of the references fails to disclose all limitations of claim 13.

Claim 19 requires "means for providing a current into a winding of a transformer." The Kern DC offset adjust item 24 does not provide current into a winding and Liu is not cited for this purpose, thus the Examiner proposed combination of the references fails to disclose all limitations of claim 19. Claim 19 requires "means for generating a magnetic flux that offsets a flux created by said DC and harmonic currents resulting from the DC." Kern does not disclose providing current to a winding to generate a magnetic flux and Liu is not cited for this purpose, thus the Examiner proposed combination of the references fails to disclose all limitations of claim 19.

The Examiner's argument regarding motivation seems inconsistent with the top of page 6 of the Final Office Action, where the Examiner states "Kern as modified by Liu teach the mitigation of such harmonic and DC current would be through offset flux generated in the windings of the transformer." So, should the motivation for combining the references be changed again, the only point the Applicant was trying to make is that *Liu did not disclose any*

HAYES SOLOWAY P.C.  
3450 E. SUNRISE DRIVE  
SUITE 140  
TUCSON, AZ 85718  
TEL. 520.882.7623  
FAX. 520.882.7643

175 CANAL STREET  
MANCHESTER, NH  
03101  
TEL. 603.668.1400  
FAX. 603.668.8567

*method or system for offsetting DC currents or the flux created by DC currents.* Liu only disclosed offsetting odd harmonics, which are not created by DC currents. Thus, one having ordinary skill in the art would not be motivated to utilize Liu to replace portions of the Kern method of offsetting DC current.

Liu is being improperly utilized. "If the proposed modification or combination of the prior art would change the principle operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). Liu is an active filter, as admitted in the title of Liu. Liu does not inject an offset current into a transmission line. Yet Liu is being disclaimed for the former purpose and utilized for the latter. The revised utilization of Liu is improper.

HAYES SOLOWAY P.C.  
3450 E. SUNRISE DRIVE  
SUITE 140  
TUCSON, AZ 85718  
TEL. 520.882.7623  
FAX. 520.882.7643

175 CANAL STREET  
MANCHESTER, NH  
03101  
TEL. 603.668.1400  
FAX. 603.668.8567



**CONCLUSION**

In view of the foregoing, it is respectfully requested that the Examiner's rejection of the subject application be reversed in all respects.

Respectfully submitted,



Todd A. Sullivan  
Attorney for Appellants  
Reg. No. 47,117

Customer No. 26,812

**CERTIFICATE OF ELECTRONIC FILING**

I hereby certify that this correspondence is being deposited with the United States Patent Office via the electronic filing procedure on June 20, 2007.

By: Kristine Stevens

TAS:klb

HAYES SOLOWAY P.C.  
3450 E. SUNRISE DRIVE  
SUITE 140  
TUCSON, AZ 85718  
TEL. 520.882.7623  
FAX. 520.882.7643

175 CANAL STREET  
MANCHESTER, NH  
03101  
TEL. 603.668.1400  
FAX. 603.668.8567